

Black Holes

To discuss ...

- Why are they called “black holes”..?
 - Not even light can escape a black hole.
Nothing that goes in... ever comes out.
- What’s inside a black hole..?
 - We don’t know. Some scientists think black holes may lead to another dimension, or another Universe.
- What evidence is there that black holes really exist..?
 - The Hubble Space Telescope took a picture of what scientists believe is a black hole at the center of a galaxy.

(Also, the laws of physics predict them. When a big star – bigger than the Sun – uses up all its fuel and burns out, the result can be a cinder that’s so big, it cannot resist the force of its own gravity, and it simply squeezes itself out of existence. At least, existence as we know it.)
- How does talking about black holes make you feel..?
 - Is it scary to think about how much we don’t know..?
 - Is it exciting to think about how much more there is to learn..?

(* Evidence of black holes is one of the most unbelievable findings in scientific history. Even scientists can be uncomfortable talking about them...because they sound like science fiction.)

To do ...

- Here’s a real “mind-bender:”

Make a chalk dot on the blackboard. A black hole that has swallowed a whole galaxy is smaller than the dot..! That’s because any black hole has “zero volume.” It’s a mathematical point, since it has squeezed itself out of existence (or existence as we know it). However, the presence of its enormous gravity – even the gravity of any galaxies it swallows – can still be felt because the gravity of anything it swallows is still “there” ... concentrated into a spot smaller than the point of a pin.



When we “see” a black hole through a telescope, we don’t see the black hole itself, we see the gigantic whirlpool in space that surrounds it – the material being pulled inside.

* NOTE: Any students who might worry that the Earth may be in danger of being swallowed by a black hole can be assured that the answer is “no.” Scientists say there are no black holes anywhere near the Earth.